

MASSACHUSETTS ENERGY EFFICIENCY PARTNERSHIP

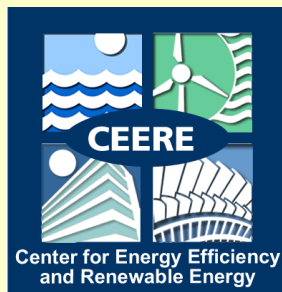
Massachusetts Industrial Energy Efficiency Programs
presented at

Tools and Resources for Enhancing the
Energy Efficiency Of Industrial Operations

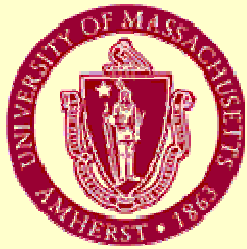
Office of Technical Assistance

Boston, MA

December 12, 2007

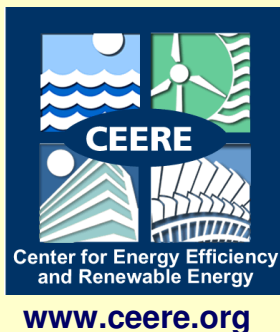


www.ceere.org



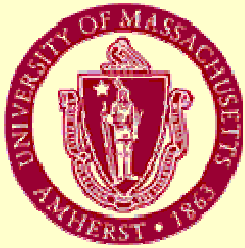
Massachusetts Energy Efficiency Partnership

- Facilitate deployment and use of energy efficiency technologies practices tools and services available to industry from state federal and private programs.
- Foster and support advancement in commercial and industrial productivity and energy efficiency through technology transfer research and development in public private partnerships utilizing the available resources from federal state and private institutions.
- Support industry and stakeholder set priorities and goals as the mechanism to sustain core business function and advances in energy use reduction productivity improvements and waste minimization.



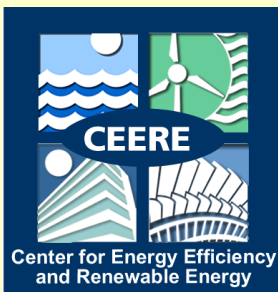
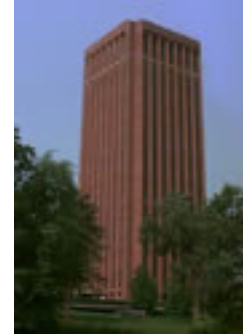
Western Massachusetts
Electric
The Northeast Utilities System





MAEEP Program Process

- Leadership/Innovation/Risk Taking
- Leveraged Support
- Program Partnering
- Value Proposition
- Process Delivery
- Measurement



www.ceere.org



AIM
ASSOCIATED INDUSTRIES
OF MASSACHUSETTS



Western Massachusetts
Electric
The Northeast Utility System



nationalgrid

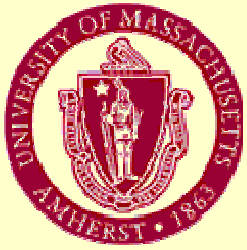


ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient World

KEYSPAN
Energy Delivery

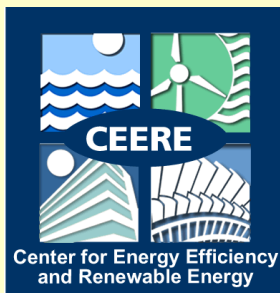


energy



IDENTIFICATION OF NORTHEAST REGIONAL INDUSTRIES

- NORTHEAST REGIONAL INDUSTRIAL TECHNOLOGY COLLABORATIVE
 - 6 New England States and New York
 - Report October 2000
- Sponsors
 - U.S. Department of Energy
 - Massachusetts Division of Energy Resources
 - New York State Energy Research and Development Authority

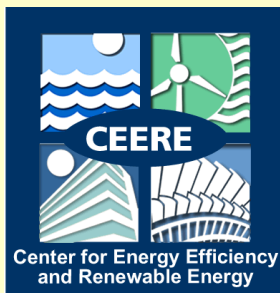


www.ceere.org

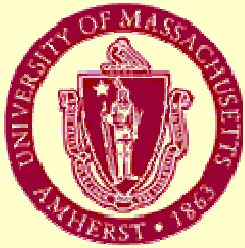


Impact Indicators

- Economic Indicators (based on 1996 data)
 - Gross Regional Product
 - Employment
 - Employee Compensation
 - Business Taxes
- Energy Indicators
 - Total Energy Purchases
 - CO₂ Emissions
- Environmental Indicators
 - CAP Emissions
 - VOC Emissions
 - TRI Releases

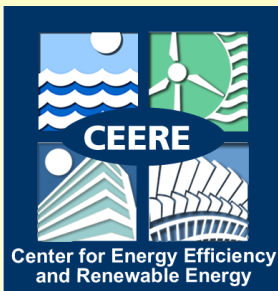


www.ceere.org

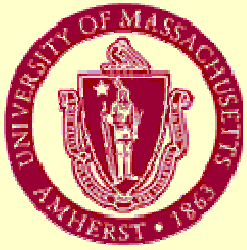


Economic Impacts

| Economic Impact: Sum of the Ranks | |
|------------------------------------|------------------|
| Industry Sectors | Sum of the Ranks |
| Printing/Publishing | 3.26 |
| Information/Communication Products | 3.18 |
| Industrial/Power Machinery | 2.96 |
| Chemicals/Plastics | 2.81 |
| Instruments/Related Products | 2.60 |
| Food Processing | 2.29 |
| Fabricated Metals | 1.84 |
| Forest Products | 1.61 |
| Textiles/Apparel | 1.50 |
| Glass/Stone/Clay | 0.60 |
| Mining | 0.47 |
| Petroleum Refining | 0.36 |
| Metal Casting | 0.18 |
| Steel | 0.14 |
| Aluminum | 0.08 |



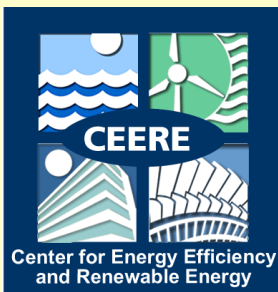
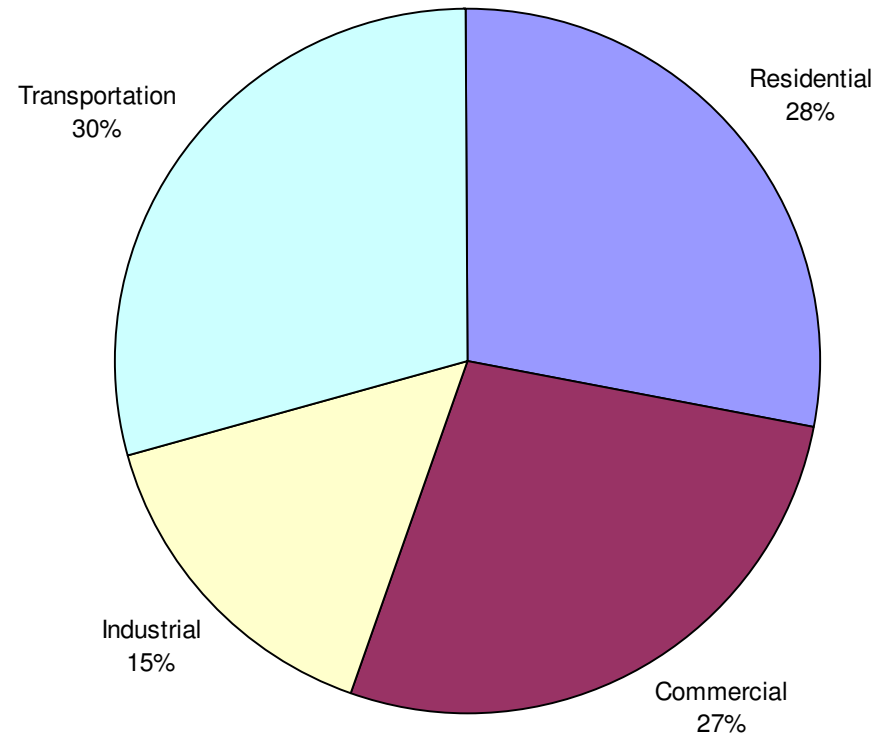
www.ceere.org



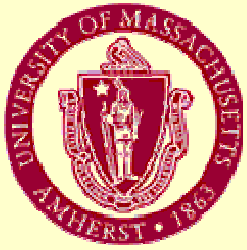
Total Northeast Energy by End-Use Sector

- 15% of Northeast energy consumption

Total NE Energy by End-Use



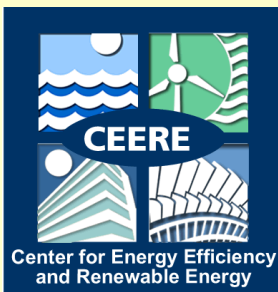
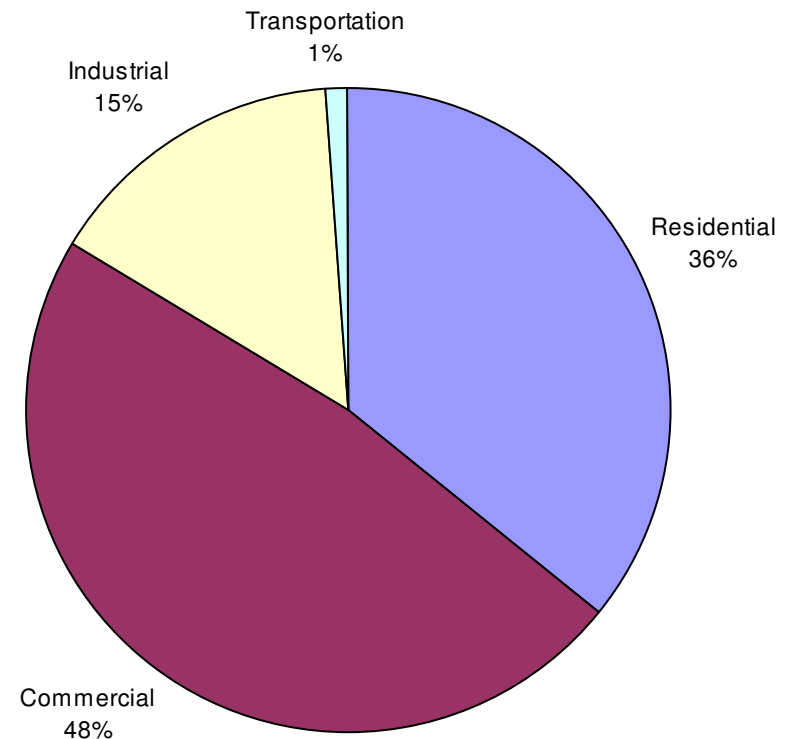
www.ceere.org



Total NE Electricity by End-Use Sector

- 15% of Northeast electricity use

NE Electricity Sales by End-Use



Center for Energy Efficiency
and Renewable Energy

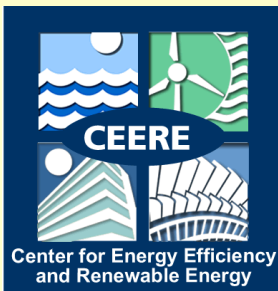
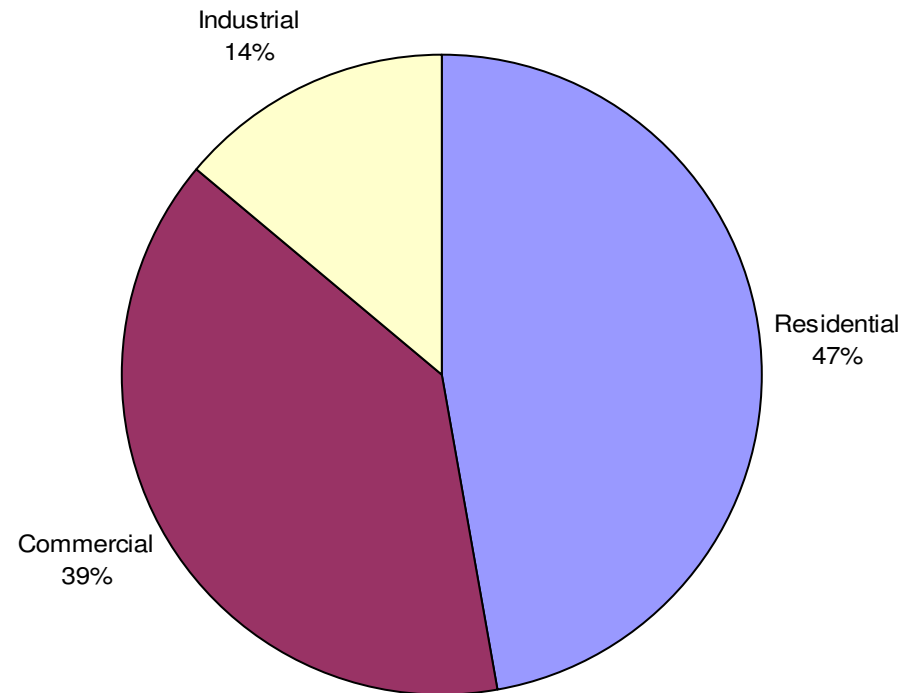
www.ceere.org



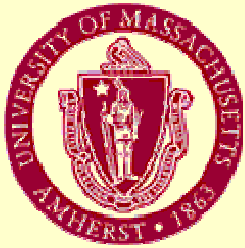
Total NE Gas Distribution by Sector

- 14% of Northeast **gas use**

NE Gas Distribution by End-Use (non-generation)



www.ceere.org



Energy Consumption by Sector

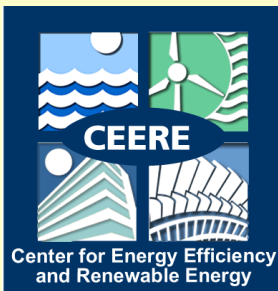
| Energy Consumption by Industry sector Seven-State Aggregate | |
|--|-------------------|
| Industry Sectors | Trillion Btu/Year |
| Forest Products | 184 |
| Chemicals/Plastics/Rubber | 110 |
| Glass/Stone/Clay | 55 |
| Instruments/Related Products | 47 |
| Electronics ^b | 45 |
| Fabricated Metals | 38 |
| Textiles/Apparel | 36 |
| Food Processing | 36 |
| Primary Metals ^c | 35 |
| Printing/Publishing | 30 |
| Industrial Machinery ^d | 27 |
| Petroleum Refining | 3 |

Sources: Consumption estimates based on the *1994 Manufacturing Energy Consumption Survey* (1998). Data for New York energy consumption estimates are based on the *1996 Annual Survey of Manufacturers* (1998).

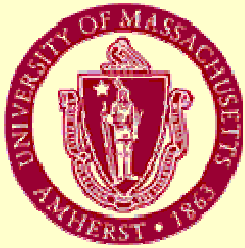
^b Electronics differs from the Information/Communication Products in that it includes power systems but excludes computer equipment.

^c Primary Metals includes Steel, Aluminum, Metal Casting and parts of the Mining National IOFs, but in this calculation Blast Furnace and Basic Steel Products have been excluded.

^d Industrial Machinery does not include power systems.



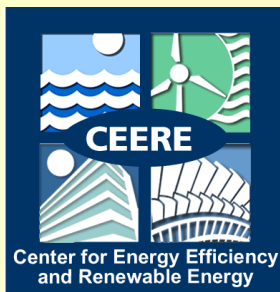
www.ceere.org



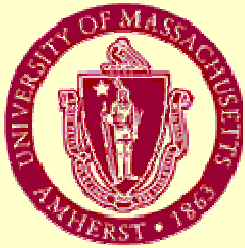
High Impact Regional Industries

Northeast: Regional Industries - Overall Impact and Importance

| |
|------------------------------------|
| Forest Products |
| Chemicals/Plastics |
| Instruments/Related Products |
| Information/Communication Products |
| Printing/Publishing |
| Industrial/Power Machinery |
| Fabricated Metals |
| Food Processing |
| Textiles/Apparel |
| Glass/Stone/Clay |
| Petroleum Refining |
| Mining |
| Metal Casting |
| Steel |
| Aluminum |

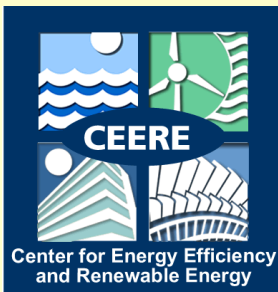


www.ceere.org



Some Available Resources

- U.S. Department of Energy
 - BestPractices Program
 - Software Tools
 - Training
 - Plant Assessments
 - IAC program
 - ESA's
 - Technology Development Assistance
- States
 - Demand-Side Management Funds
 - Portfolio Standards
 - DG Support
- Utility Programs
 - Rebates
 - Comprehensive Assistance
 - *example from MA*



www.ceere.org



Levels of Training

- Awareness Presentations by Qualified Specialists (1-2 hours)
- Webcasts (1-2 hours)
- End-User Training (1-2 days)
- Qualified Specialist Training (2-3 days)

Recent Trainings:

Airmaster Qualified Specialist – Aug. 28-31 – Springfield, MA

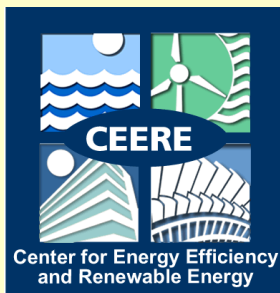
PSAT Qualified Specialist – Sep. 25-27 – Amherst, MA

Fundamentals of Compressed Air – Nov. 20 – Northboro, MA

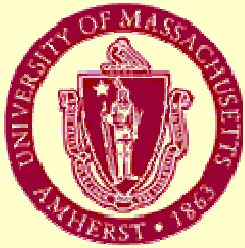
SSAT End-User Training – Yesterday (Dec. 11) – Waltham, MA

Upcoming Trainings:

FanSAT Qualified Specialist, PSAT End-User Training



www.ceere.org

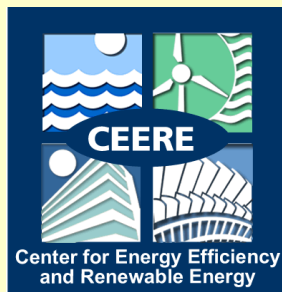


Plant Energy Assessments

Small/Medium Plant Assessments



- Plants with energy consumption \$100,000 to \$2.5 million
- Over 500 assessments per year (nationwide)
- Average plant savings: 4.2 billion Btus (about \$21,000)
- Conducted by Industrial Assessment Centers at 26 universities



www.ceere.org

Large Plant Assessments

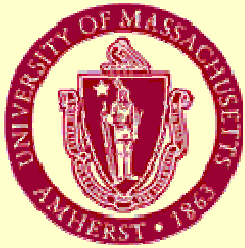


- 250 assessments underway or to be completed in 2007

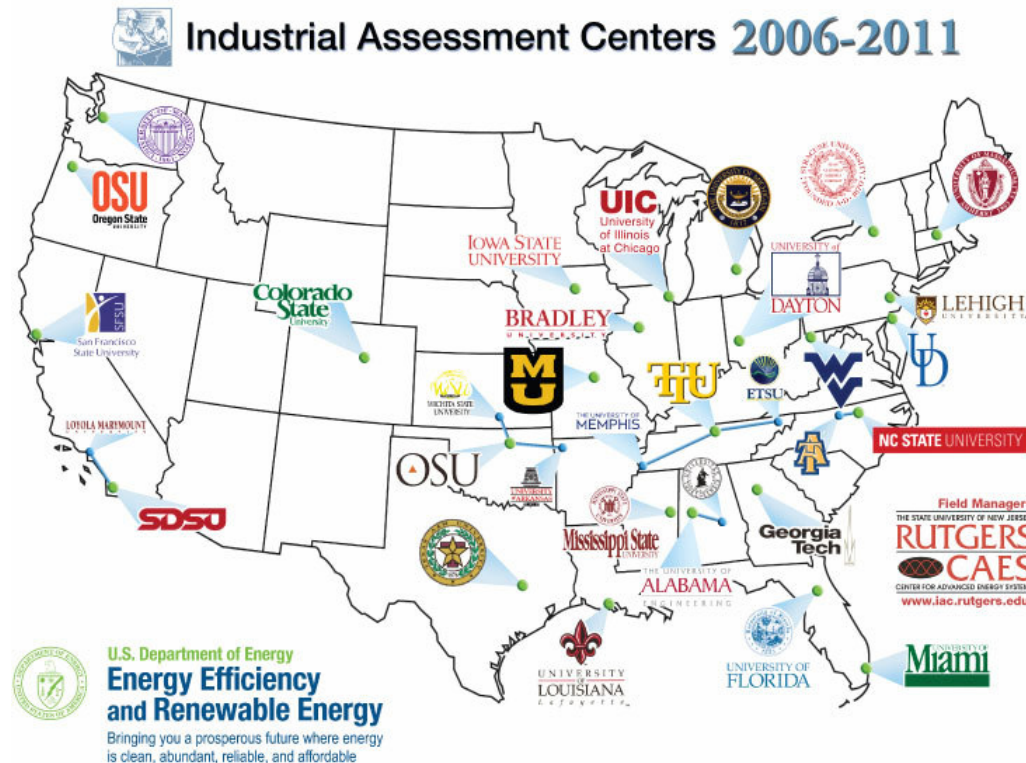
Plant wide assessments
(comprehensive)

Targeted system assessments
(quick focused)

- Average identified energy savings per plant: 10-15%
- Annual savings implemented ~\$30 million



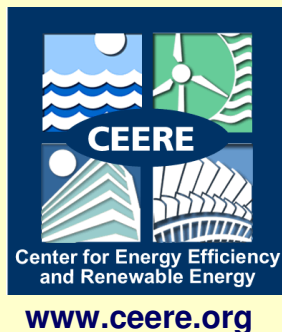
Beginning in 1984 with four Schools

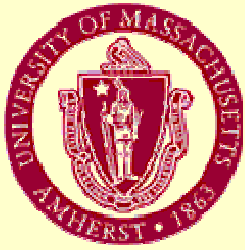


Currently 26 Schools in the program

- For more information on IAC program and participating schools visit:

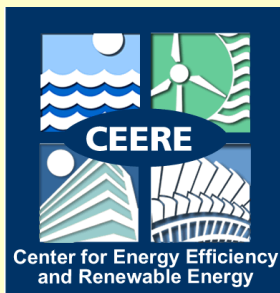
<http://iac.rutgers.edu/database/centers.php>



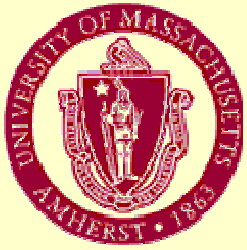


Industrial Assessment Center at the University of Massachusetts

- Provides assistance to New England Industry since 1984
- US DOE Funding allows the IAC Program to provide no cost energy conservation, waste prevention and productivity assistance to small and medium sized industrial firms within S.I.C. 20 through 39

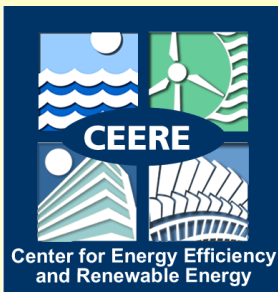


www.ceere.org

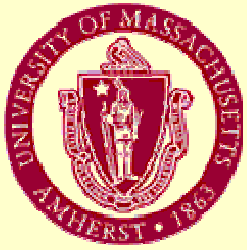


Client Criteria

- Have Annual Energy Costs Less Than \$ 2.5 Million
- Have Gross Sales Less Than \$100 Million
- Have Less Than 500 Employees
- Have No In-house Energy Staff
- Be Within 150 Miles of Amherst, MA

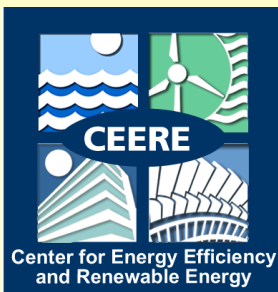


www.ceere.org



UMASS Clients 1984-2007

- Over 625 plants visited since 1984
- Over \$11.3 billion in gross annual sales
- \$287 million in annual energy costs
- 76,500 employees
- Over 2,500 recommendations with \$62,000 average annual cost savings per assessment
- \$125,000 average savings per assessment in 2005-2006



www.ceere.org

2007 C&I Energy Efficiency Programs

- » **Construction Solutions**

 - oAdvanced Buildings

 - oPerformance Lighting

- » **Business Solutions**

- » **Small Business Solutions Program**

- » **Building Performance Programs**

- » **Engineering Services**

- » **Training and Education**

Business Solutions

» Focus on Existing Equipment and Systems

» Program Tracks

- Strategic Accounts: Customers >500 kW demand and national accounts
- Mid-Sized Accounts: Customers 200 kW < 500 kW demand
- Continuous Commissioning

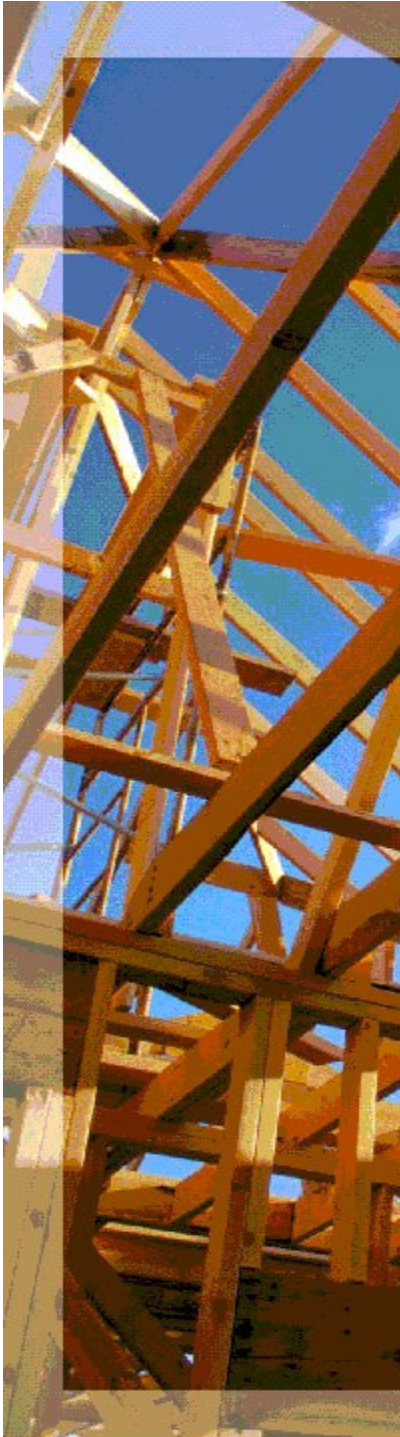
» Financial incentives

- Up to 50% of total costs
- Up to 50/50 cost sharing for technical assistance



National Grid Energy Efficiency Program Overview

- ◆ **Objective of the programs**
 - **Provide incentives to customers to reduce the cost of improving the efficiency of their equipment and their facilities**
 - **Offer technical assistance to customers, contractors, vendors, etc. to identify and evaluate energy efficiency opportunities**



National Grid's Large Business Energy Efficiency Programs

- ◆ ***New Construction - Design 2000plus***
 - **Targets new construction, major renovations and equipment replacement**
 - **Promotes selection and installation of higher efficiency equipment and systems**
 - **Promotes comprehensive and optimized systems during design phase**
 - **Incentives up to 75% of incremental costs**
- ◆ ***Retrofit - Energy Initiative***
 - **Incentives for replacing existing equipment or systems**
 - **Incentives up to 45% of project costs**

nationalgrid

Program Track Option - Prescriptive

Prescriptive approach

Predetermined incentive amounts for individual efficiency measures

- Lighting
- Motors
- VFD
- HVAC
- Air Compressors



Required Eligibility Requirements available on Applications

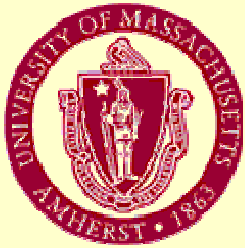
nationalgrid

Program Track Option - Custom

- ◆ Custom Approach
 - For unique projects and equipment
 - Project requires engineering evaluation of costs and savings
 - Incentives based on actual costs
 - Projects must pass Benefit/Cost screening to determine eligibility for incentives
- ◆ National Grid Representatives will lead the customer through the process



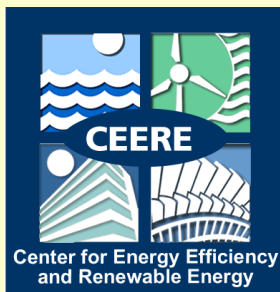
nationalgrid



Connecticut Large Energy Plants

Ahlstrom Windsor Locks LLC
Allegheny Ludlum Corporation
Amgraph Packaging Inc
Ansonia Copper & Brass Inc
Boehringer Ingelheim Pharmaceuticals
Bollere Inc
Caraustar Industries, Inc
Cellu Tissue Corporation
Clairol Incorporated Del Corp
Connecticut Container Corp
Curtis Packaging Corporation
Cytec Industries Inc
Dow Chemical Company
Electric Boat Corporation CT
Engelhard Corporation
Greif Inc
Henkel Loctite Corporation
Howmet Corporation

International Paper Company
International Paper Company
Johnson Corrugated Products
Kimberly-Clark Corporation
O&G Industries Inc
Phelps Dodge Corp.
Rand Whitney Containerboard
Rand Whitney Containerboard
Rice Packaging Inc
Scapa Tapes North America
Sikorsky Aircraft Corporation
Simkins Industries Inc
Smurfit-Stone Container Corp
Smurfit-Stone Container Corp
Smurfit-Stone Container Corp
Sprague Paperboard Inc(Caraustar)
TI Group Auto Systems LLC
Ulbrich Stainless Steels & Metals



www.ceere.org



Maine Large Energy Plants

Bath Iron Works Corporation

Cascades Inc ME

Dayton Sand & Gravel Co Inc

Domtar Industries Inc

Dragon Products Company

Huhtamaki Consumer Packaging

International Paper Company

International Paper Company

International Paper Company

JM Huber ME

Katahdin Paper Company ME

Knight-Celotex LLC

Louisiana-Pacific Corp ME

Louisiana-Pacific Corp ME

Madison Paper Industries

MeadWestvaco Corporation

Newark Paperboard Products ME

Nexfor Fraser Papers Inc

Philips Electronics North Amer

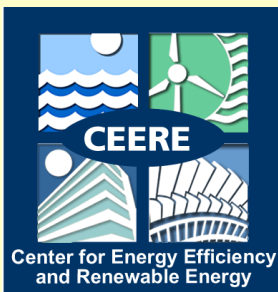
Sappi Fine Paper ME 49

Sappi Fine Paper

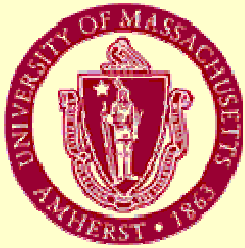
Tambrands Inc

Volk Packaging Corporation

Wausau-Mosinee Paper Corporation



www.ceere.org

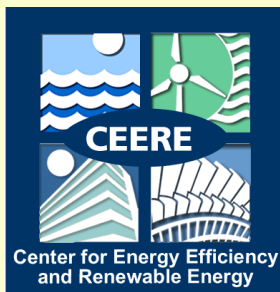


Massachusetts Large Energy Plants

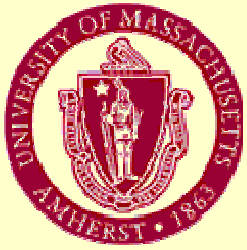
A W Chesterton Company
Americraft Carton Inc
AstraZeneca LP
Bay State Paper Company
Bayer Healthcare LLC
Bicknell & Fuller Corrugated P
Bostik Findley Inc
Boston Beer Co.
Brox Industries Inc
Cabot Corporation
Cambridge Tool & Mfg Co
Canson Inc
Cascade Diamond Inc
Crane & Co Inc
Creative Packaging Inc M
Erving Paper Mills Inc
Esselte Corporation
F Schumacher & Co
Fox River Paper Company LLC
General Electric Company
Georgia-Pacific Corp

Hampden Papers
Hazen Paper Company
Hub Folding Box Company Inc
Inland Paperboard and Packaging
Interstate Cont Lowell LLC
Jen-Coat Inc
Kanzaki Specialty Papers Inc
Leach & Garner Company
LeBaron Foundry Inc M
Lorusso Corporation
Ludlow Company LP
Malden Mills Industries Inc
Mason Box Co
Mead Corporation
Merrimac Paper Company Inc
New England Wooden Ware Corp
Newark Group Inc
Newark Group Inc
Newark Group Inc MA
Packaging Corporation America
Parker Hannifin Corporation

Quaker Fabrics Corporation
Rand Whitney Containerboard
Rock-Tenn Company
Rohm and Haas Company
Saint-Gobain Container Inc
Sarnafil Inc
Schweitzer-Mauduit Intl
Seaman Paper Co.
Sepracor Inc
Simkins/Harvard Folding Box Co
Smurfit Munksjo Paper Inc
Smurfit-Stone Container Corp
Solutia Inc
Sonoco Products Co.
Sonoco Products Co.
Stern Metals Inc
Sullivan Paper Co Inc
Texon USA Inc
Thompson Products Inc
Venture Tape Corp



www.ceere.org



New Hampshire Large Energy Plants

Anheuser-Busch Incorporated

Kluber Lubrication N Amer LP

APC Co., Inc

Monadnock Paper Mills Inc

Fraser Papers Inc

Moore-Bsness Forms Systems Div

Groveton Paper Board Inc

Nashua Corporation

Hampshire Chemical Corp

Nashua Corporation

Hampshire Paper Corp

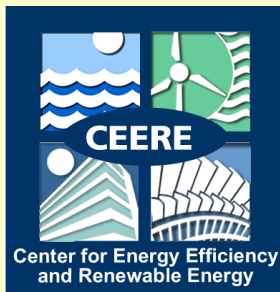
Nexfor Fraser Papers Inc NH

Hitchiner Manufacturing Co

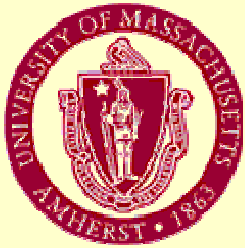
Wausau-Mosinee Paper Corporation

Innovative Paper Technologies

Wisconsin Label Corporation

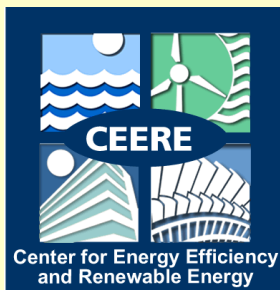


www.ceere.org

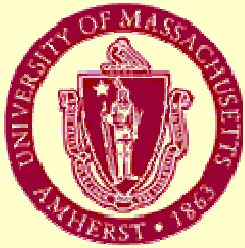


New Jersey Large Energy Plants

| | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|
| A E Stone Inc | Curtis Papers Inc | Innovative Folding Carton Co | Schering Corporation |
| AFG Industries Inc | Custom Index Inc | International Flavors & Fragrances | Schweitzer-Mauduit Intl |
| Aluminum Shapes LLC | Cytec Industries Inc | International Flavors & Fragrances | Seton Acquisition Inc |
| Amerada Hess Oil Corp | Delta Corrugated Paper | International Specialty Pdts | Sika Corporation |
| Amersham Health Inc | Dow Chemical Company | J Josephson Inc | Simkins Industries Inc |
| Amsted Industries Incorporated | Durand Glass Manufacturing Co | Janssen Pharmaceutical Inc | Smurfit-Stone Container Corp |
| Anchor Glass Container Corp | Engelhard Corporation | Johnson & Johnson | Southern Container Corp |
| Anderol Inc | ExxonMobil Corporation | Karnak Corporation | Sunoco Inc |
| Anheuser-Busch Incorporated | ExxonMobil Corporation | Lps Industries Inc | Sybron Chemicals Inc |
| Arko Paper Products Co Inc | Ferro Corporation | Mallinckrodt Baker Inc | Thermwell Products Co Inc |
| Ashland Inc | Fibermark Inc | Marcas Paper Mills Inc | Tilcon New York Inc |
| Atlantic States | Fisher Scientific Company LLC | Merck & Co Inc | Total Lubricants Usa Inc |
| BASF Corporation | Flexpaq Corporation | Merck & Co Inc | United States Gypsum Co. |
| Bell Container Corp | Formosa Plastics Corp USA | National Starch & Chemical Company | United States Pipe & Fndry Co |
| Bel-Ray Company Inc | Garwood Paperboard | Organon Inc | United Wire Hanger Corp |
| Berlex Laboratories Inc | General Motors Corp | Owens Corning | Universal Folding Box Co Inc |
| BP Corporation North America | Gerdau AmeriSteel | Pfizer Inc | Valero Energy |
| Bristol-Myers Squibb Company | Gerdau AmeriSteel | President Container Inc | Victory Box Corp |
| Bristol-Myers Squibb Company | Gift Box Corporation America | Recycled Pprbd Inc Clifton | Weldon Asphalt Corp |
| Campbell Soup Company | Hangsterfers Laboratories | Resolutions Packaging Towaco | Weldon Materials Inc |
| Castrol North America Inc | Hercules Incorporated | Rhodia Inc | Weyerhaeuser Company |
| CCL Label Inc | Hoeganaes Corporation | Roche Pharmaceuticals NJ | Weyerhaeuser Company |
| Chanel Inc | Holland Manufacturing Co Inc | Rockline Industries Inc | Weyerhaeuser Company |
| Church & Dwight Co Inc | Home Care Industries Inc | Roysons Corp | |
| ConocoPhillips | Howmet Corporation | Saint-Gobain Container Inc | |

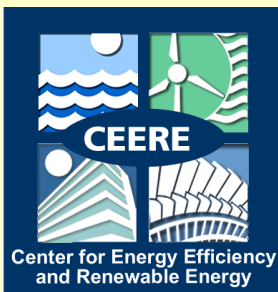


www.ceere.org

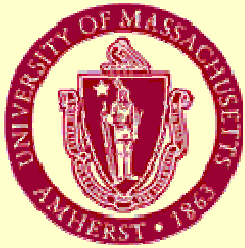


New York Large Energy Plants

| | | | |
|--------------------------------|---|----------------------------------|-------------------------------|
| A B C Die Cutting Corp | Bennington Paperboard Co.(The Newark Group Inc) | Crucible Materials Corp De | General Electric Company |
| Acco Brands Inc | Bio-Tech Mills, Inc | Cumberland Packing Corp | General Motors Corp |
| Albany International Corp | Bristol-Myers Squibb Company | Delphi Corporation | George Weston Bakeries Inc |
| Alcan Aluminum Corporation | Bristol-Myers Squibb Company | Diamond Paper Box Company | Georgia-Pacific Corp |
| Alcoa Inc | Brownville Specialty Paper, Inc | Disc Graphics Inc | Glens Falls Lehigh Cement Co. |
| Alcoa Inc | Burrows Paper Corporation | Dominick Terzuoli | Goodyear |
| Altana Inc | Burrows Paper Corporation | Du Pont | Goulds Pumps |
| American Packaging Corporation | Burt Rigid Box Inc | Du Pont | Great Lakes MDF LLC |
| American Sugar Refining | Cascades Inc | Eastman Kodak Company | Greif Inc |
| AMPAC | Cellu Tissue Corporation | Enviro Pac Inc | Guardian Industries |
| Amscan Inc | CIBA Specialty Chemicals | F M Howell & Company | Gussco Manufacturing Inc |
| Anheuser-Busch Incorporated | Climax Manufacturing Company | Farrington Packaging Corp | High Falls Brewing Co LLC |
| APC Paper Co. of New York | Climax Manufacturing Company | Felix Schoeller Technical Papers | Huhtamaki Consumer Packaging |
| Arkay Packaging Corp | Cofire Paving Corp | Fibermark Inc | IBM |
| Atlantic Paper & Foil Corp | Consolidated Container Co LLC | Finch, Pruyn & Co, Inc | Imperial Paper Box Corp |
| Battenfeld-American Inc | Corning Incorporated | Finish Line Technologies Inc | Interface Solutions, Inc |
| Battenfeld-American Inc | Creative Bath Products Inc | GE Advanced Materials | International Bus Mchs Corp |

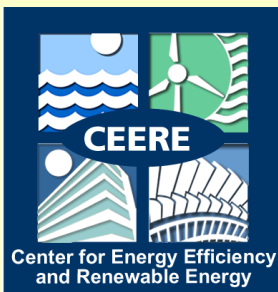


www.ceere.org

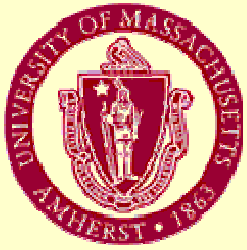


New York Large Energy Plants

| | | | |
|------------------------------------|-------------------------------|--------------------------------|------------------------------|
| International Flavors & Fragrances | Monroe Fluid Technology Inc | Pepsi Bottling Group Inc | Standard Folding Cartons Inc |
| International Paper Company | Natural Organics Labs Inc | Pepsico Inc | Stiefel Laboratories Inc |
| International Paper Company | New Venture Gear New York LLC | Pfizer Inc | Stoffel Seals Corporation |
| Irving Tissue Inc | Nice-Pak Products Inc | Pfizer Inc | Suit-Kote Corp |
| Island Container Corp | Norampac Industries Inc | Philip Morris USA Inc | Suit-Kote Corp |
| Jamestown Container Lockport | Norbord | Plaza Packaging Corp | Synco Chemical Corporation |
| King Road Materials Inc | Novartis Corporation | Pratt Industries Inc | Syracuse Label Co Inc |
| Kolmar Laboratories Inc | Nucor Steel | Procter Gamble Pharmaceuticals | Tambrands Inc |
| Labelon Corporation | Occidental Chemical Corp | Rich Products Corporation | Tesa Tape Inc |
| Lafarge North America Inc | Olin Corporation | SCA Tissue North America LLC | Tilcon New York Inc |
| Leviton Manufacturing Co Inc | Osmose Inc | Schenectady International | Tim-Bar Corporation |
| Light Fabrications Inc | Outokumpu American Brass Inc | Schiffenhaus North Inc | United States Gypsum Co. |
| LTX Fiber Corp | Owens Corning | Smurfit-Stone Container Corp | Vulcraft of New York Inc |
| MeadWestvaco Corporation | Owens-Illinois | Smurfit-Stone Container Corp | Westvaco Corporation |
| Mod-Pac Corp | Packaging Corporation America | Solvay Paperboard LLC | Weyerhaeuser Company |
| Mohawk Paper Mills Inc | Packaging Corporation America | Southern Container Corp | Weyerhaeuser Company |
| Mohawk Paper Mills Inc | Peckham Industries Inc | St. Lawrence Cement Company | Wyeth Pharmaceuticals |



www.ceere.org



Rhode Island Large Energy Plants

Afco Inc

CJ Fox Company

Clariant Corporation

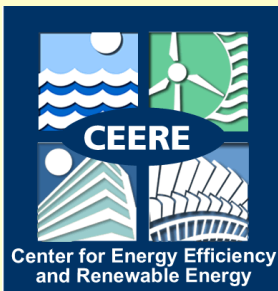
Key Container Corporation

New England Paper Tube Co
Inc

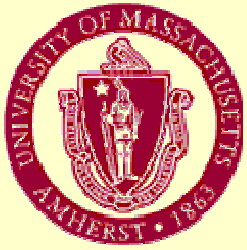
Original Bradford Soap Works

Technical Materials Inc

Union Industries Inc



www.ceere.org



Vermont Large Energy Plants

CFM

Fibermark Inc

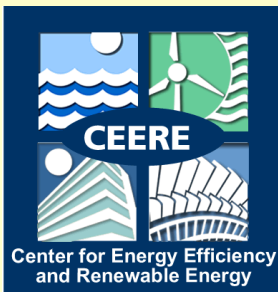
Frank W Whitcomb Cnstr Corp

IBM

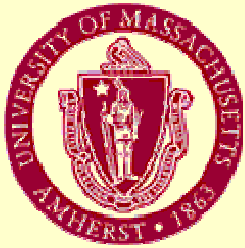
Putney Paper Co Inc

Rock-Tenn Company

US Samica Corp



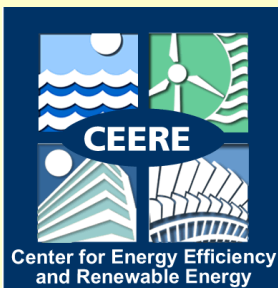
www.ceere.org



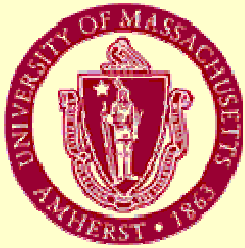
Notes about New Jersey

New England and NY Manufacturing Plants with over 20 employees

| SIC | Conn. | Maine | Mass | NH | NY | RI | VT | NJ | % in NJ |
|--|-----------|-----------|------------|-----------|------------|-----------|-----------|------------|------------|
| 01 Furniture and fixtures | 26 | 9 | 61 | 29 | 213 | 13 | 19 | 122 | 25% |
| 01 Lumber and Wood Products | 29 | 112 | 52 | 51 | 184 | 7 | 40 | 121 | 20% |
| 01 Paper and allied products | 64 | 29 | 168 | 77 | 299 | 30 | 11 | 209 | 24% |
| <i>02 Chemicals and allied products</i> | <i>73</i> | <i>12</i> | <i>139</i> | <i>14</i> | <i>258</i> | <i>19</i> | <i>9</i> | <i>458</i> | <i>47%</i> |
| 02 Rubber and miscellaneous products | 119 | 27 | 252 | 57 | 340 | 47 | 19 | 344 | 29% |
| 03 Instruments and related products | 136 | 7 | 299 | 53 | 298 | 30 | 11 | 458 | 35% |
| 04 Electronic and other electric equipment | 186 | 35 | 368 | 96 | 452 | 32 | 19 | 331 | 22% |
| 05 Printing and publishing | 238 | 46 | 410 | 9 | 1159 | 52 | 57 | 423 | 18% |
| 06 Industrial machinery and equipment | 289 | 39 | 412 | 101 | 586 | 48 | 37 | 436 | 22% |
| 07 Fabricated metal products | 367 | 36 | 355 | 59 | 613 | 94 | 20 | 453 | 23% |
| 08 Food and kindered Products | 64 | 50 | 169 | 21 | 457 | 23 | 42 | 324 | 28% |
| 09 Apparel and other textile products | 49 | 15 | 167 | 21 | 1418 | 15 | 15 | 165 | 9% |
| 09 Textile mill products | 31 | 32 | 103 | 25 | 258 | 61 | 5 | 85 | 14% |
| <i>10 Stone, clay and glass products</i> | <i>38</i> | <i>20</i> | <i>77</i> | <i>24</i> | <i>183</i> | <i>12</i> | <i>31</i> | <i>194</i> | <i>34%</i> |
| <i>11 Petroleum and coal products</i> | <i>7</i> | <i>2</i> | <i>12</i> | <i>4</i> | <i>25</i> | | | <i>41</i> | <i>45%</i> |
| 12 Primary metal industries | 87 | 3 | 98 | 26 | 143 | 23 | 6 | 152 | 28% |
| TOTALS | 1964 | 541 | 3368 | 700 | 7550 | 722 | 365 | 4524 | 23% |



www.ceere.org



U.S. DOE Best Practices

Software Tools

Steam System Scoping Tool

Profiles and grades large steam system operations/management.

Steam System Assessment Tool

Assesses potential benefits of specific steam-system improvements.

3EPlus Insulation Assessment

Tool Calculates most economical thickness of insulation for a variety of operating conditions.

Process Heating Assessment and Survey Tool

Assesses energy use in furnaces/performance improvements

NOx and Energy Assessment Tool

(NxEAT) analyzes NOx emissions and energy efficiency improvements

The Quick Plant Energy Profiler

(QuickPEP) is an online software tool that benchmarks industrial energy use

Motor Master + Assists in energy-efficient motor selection and management. (International)

Pumping System Assessment

Tool Assesses the efficiency of pumping system operations.

Fan System Assessment Tool

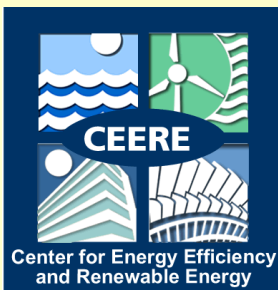
Quantifies potential benefits of a more optimally configured fan system

Chilled Water Assessment Tool Quantify the potential benefits of chilled water system improvements.

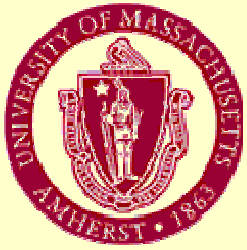
Air Master+ Provides comprehensive information on assessing compressed air systems.

Plant Energy Profiler

(Chemical Industry)
Quick computation tool to show how energy coming into the plant is used and opportunities for improvements.



www.ceere.org

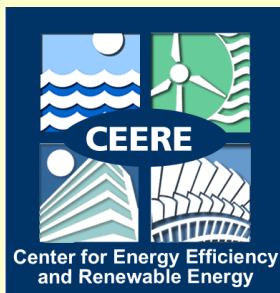


Motors, Pumps, and Fans

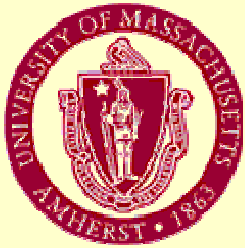
Motor-driven equipment accounts for 64 percent of the electricity consumed in the U.S. industrial sector.

Chemical Industry Benchmarks

- 14.4% of motors are energy-efficient
- 12.5% of motors with ASDs



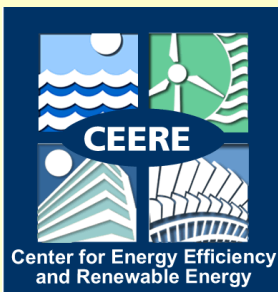
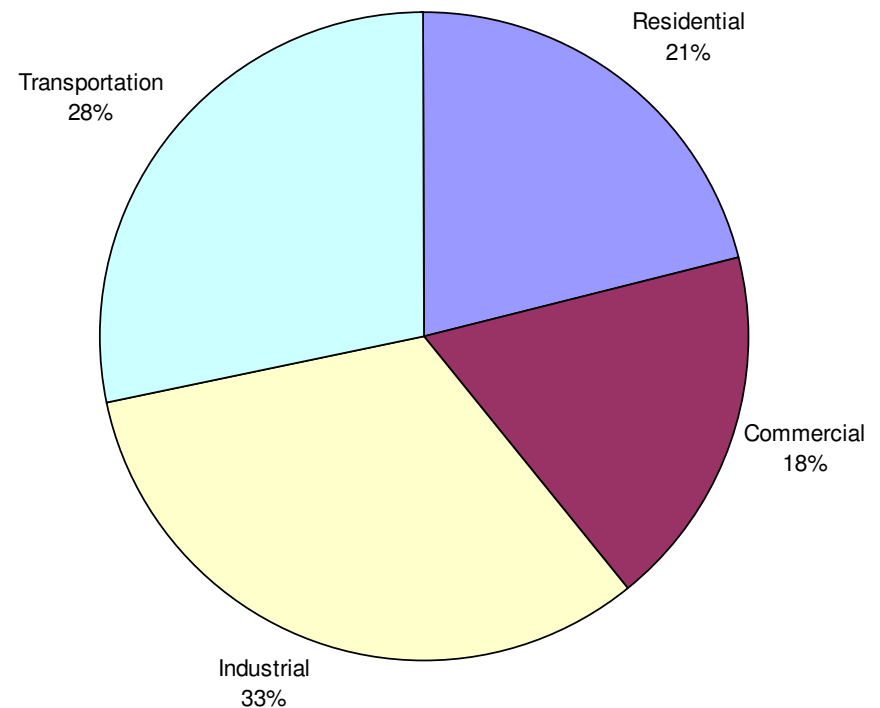
www.ceere.org



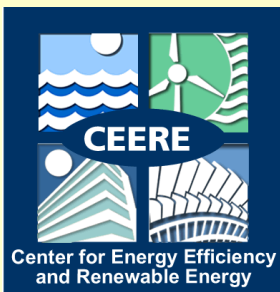
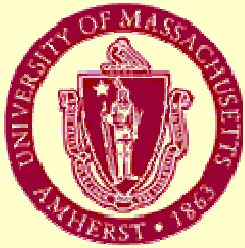
Total US Energy by End-Use Sector

- 1/3 of U.S. **energy consumption**
- Accounts for more than 40% of U.S. **natural gas** demand
- 28% of U.S. electricity demand
- Approximately 30% of U.S. **greenhouse gas** emissions
- Energy is key to **economic growth** in domestic manufacturing

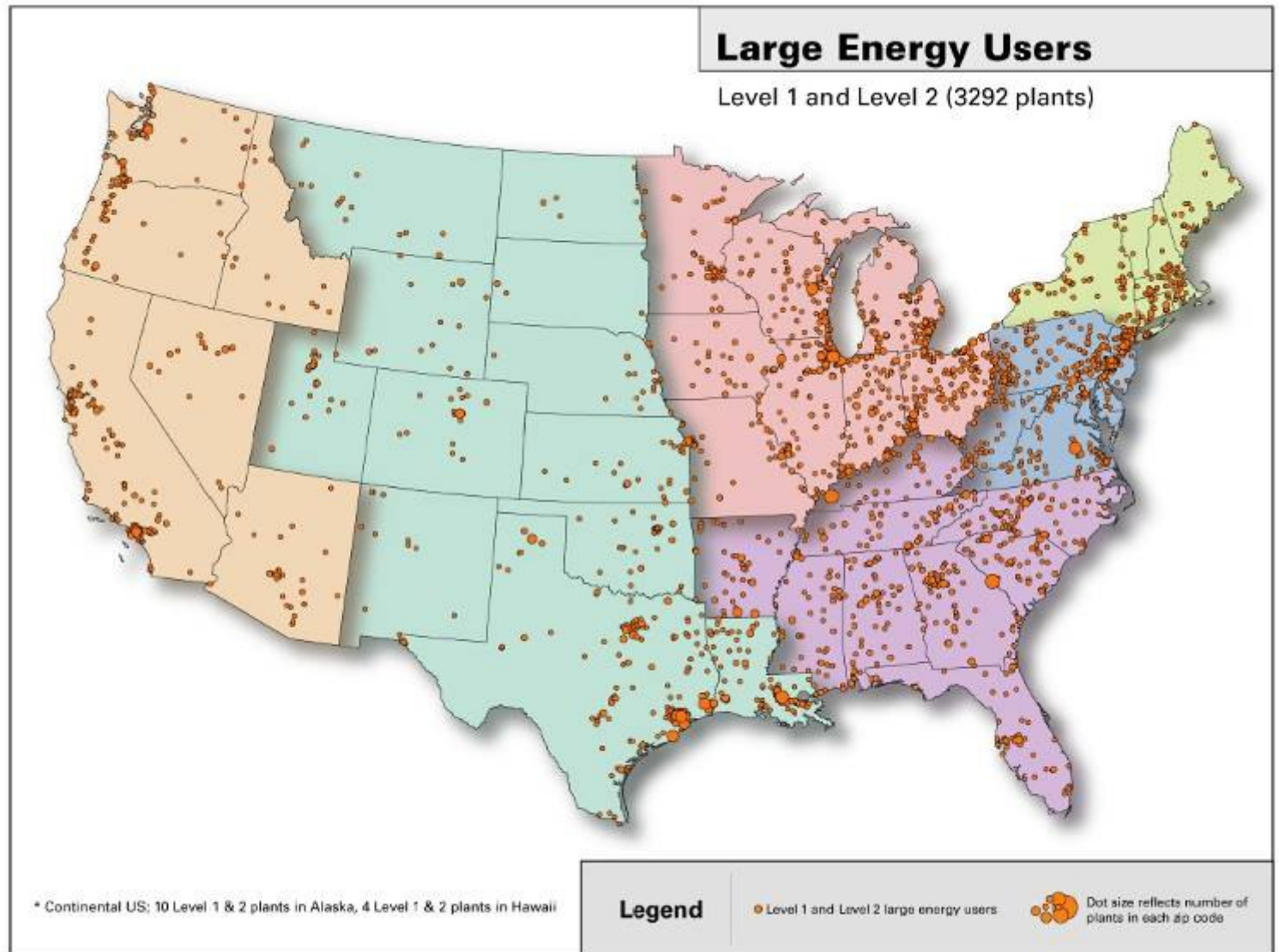
Total US Energy by End-Use



www.ceere.org



www.ceere.org



2005 Large Energy Users Report, Lawrence Berkeley National Laboratory and Project Performance Corporation